CORDELL BANK
NATIONAL MARINE SANCTUARY



FINAL MANAGEMENT PLAN

PREPARED AS PART OF THE
JOINT MANAGEMENT PLAN REVIEW (JMPR)

VOLUME I OF IV

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NOAA

CORDELL BANK
NATIONAL MARINE SANCTUARY
FINAL MANAGEMENT PLAN

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The Cordell Bank National Marine Sanctuary (CBNMS) Final Management Plan (FMP) represents the outcome of a three-year community-based process. The issue areas and programs addressed in this document were built with guidance from the general public, sanctuary staff, agency representatives, experts in the field and the sanctuary advisory council. We would like to give special thanks to the members of the sanctuary advisory council who collectively dedicated over 2,100 hours of volunteer time to this effort. Josh Churchman, Chuck Wise, Dan Cohen, Carol Keiper, Tom Lambert, Lance Morgan, Todd Steiner, Bill McMillon, Doreen Moser-Gurrola, Duffy Ross, Richard Powers Joe Smith and Michael Mery – your contribution of time and input into the completion of this management plan cannot be overstated.

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For readers who would like to learn more about the management plan, CBNMS policies and community-based management processes, we encourage you to visit our website at www.cordellbank.noaa.gov. Readers who do not have Internet access may call the Sanctuary office at (415) 663-0314 to request relevant documents or further information.

The National Oceanic and Atmospheric Administration's (NOAA) National Marine Sanctuary Program (NMSP) seeks to increase public awareness of America's ocean and Great Lakes treasures by conducting scientific research, monitoring, exploration and educational programs. Today, the program manages thirteen national marine sanctuaries and one marine national monument that together encompass more than 150,000 square miles of America's ocean and Great Lakes natural and cultural resources.

The NOAA Ocean Service manages the sanctuary program and is dedicated to exploring, understanding, conserving and restoring the nation's coasts and oceans and works to balance environmental protection with economic prosperity in its mission promoting safe navigation, supporting coastal communities, sustaining coastal habitats and mitigating coastal hazards.

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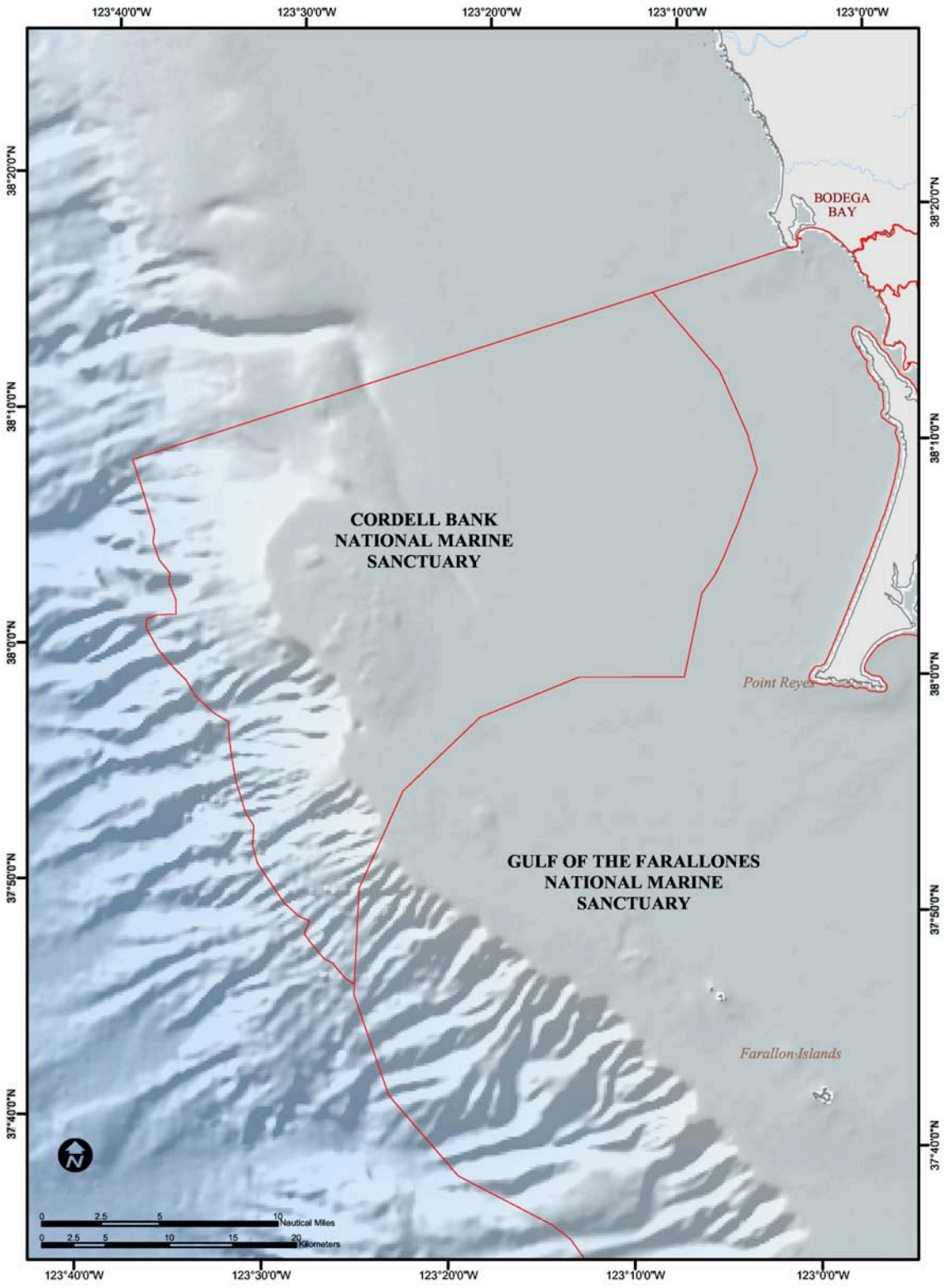
JOINT MANAGEMENT PLAN REVIEW STUDY AREA

CORDELL BANK
NATIONAL MARINE SANCTUARY MAP



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EXECUTIVE SUMMARY

Current Status

This document is the Final Management Plan (FMP) for Cordell Bank National Marine Sanctuary (CBNMS), resulting from a management plan review of the sanctuary, the first since the implementation of its final regulations in 1989. The National Oceanic and Atmospheric Administration (NOAA) has prepared the plan in cooperation with sanctuary staff, the public, state and federal agencies, stakeholders, and the Cordell Bank Sanctuary Advisory Council.

CBNMS Designation

CBNMS has been vested with the authority, in accordance with the National Marine Sanctuaries Act (NMSA) to provide comprehensive and coordinated conservation and management of the marine resources on the continental shelf, from 6 to 30 nautical miles due west of Point Reyes, California, and 43 nautical miles northwest of the Golden Gate Bridge. This is an area of special significance due to its unique geological and oceanic features that create conditions supportive of an extraordinarily diverse and abundant marine life, and thus was designated a National Marine Sanctuary in 1989. The main feature of the sanctuary is an offshore granite bank 4.5 miles wide by 9.5 miles long. The rocky bank emerges from the soft sediments of the continental shelf, with the upper pinnacles reaching within 115 feet of the ocean's surface, and shelf depths at the base of the Bank in roughly 300 to 400 feet of water.

Management Plan Review

The 1992 amendments to the NMSA required that each of the national marine sanctuaries engage in a management plan review process every five years to reevaluate site-specific goals and objectives, management techniques, and strategies. The National Marine Sanctuary Program (NMSP) reviewed the management plans of Cordell Bank, Gulf of the Farallones, and Monterey Bay national marine sanctuaries jointly. These sanctuaries are located adjacent to one another, are managed by the same program, and share many of the same resources and issues. In addition, all three sites share overlapping interest and user groups. It has also been more cost effective for the NMSP to review the three sites jointly, rather than conducting three independent reviews.

This management plan review process has provided CBNMS with the opportunity to: take a closer look at how the environment has changed over the past seventeen years; understand the cause and effect relationship of human activity and natural perturbations on the marine resources; and engage the public in the management decision making process. As a result of this process, CBNMS is reshaping how it manages the marine resources, from restructuring its program areas to updating its regulations.

CBNMS' Original Management Plan

The specific requirements of the sanctuary's original management plan were compatible with the overall sanctuary management concept embodied in the NMSA and its implementing regulations (15 CFR, Part 922), which requires that a management plan be prepared for each national marine sanctuary. The original management plan, developed at the time of designation of the sanctuary, provided guidelines to ensure that all management actions undertaken in the first five years of designation were directed to resolving important issues as a means of meeting sanctuary objectives. Management objectives were considered in three areas: resource protection, interpretation, and research. The management plan also called for promulgation of five regulations or prohibitions.

CBNMS' Revised Management Plan

This new CBNMS Final Management Plan (FMP) is one of three (Volume I of IV) management plans, including a Final Environmental Impact Statement (FEIS), that comprise the set of management strategies and proposed regulatory actions for the three sanctuaries that have been engaged in the Joint Management Plan Review (JMPR). Although there has been every attempt to coordinate structure and content across the three management plans, each plan reflects the different working groups, make-up of sanctuary advisory councils and sanctuary staff, and site-specific approaches to the management plan review process. Additionally, each of the three sanctuaries has a different history and is in a different stage of its life cycle.

Since its designation in 1989, CBNMS has grown from having no dedicated staff for the first six years, to hiring the first full-time staff member in 1995, but was funded by Gulf of the Farallones National Marine Sanctuary (GFNMS). In 1998, a separate $129,000 budget was allocated; in 2000, two additional staff were hired; and in 2003, a manager was hired.

The NMSP has identified six phases that describe the evolution of a sanctuary from designation to maturation over a period of approximately 10-20 years. The phases include pre-designation and designation, start-up and early operations, transition (first management plan review), mature operations, recalibration (second management plan review), and adaptive management. Today, CBNMS is in the transition phase, implementing its first management plan with the support of a staff of six and a budget of $635,000, and many new partnerships. The new management plan provides the framework for implementing the five action plans listed below.

The CBNMS final management plan will guide the operation of the sanctuary for the next five to ten years, helping the sanctuary set budget and project priorities each year in preparation of its annual operating plan. Timelines and annual estimates are presented in this plan to: assist staff in the development of the CBNMS annual operating plan; assist the sanctuary advisory council (SAC) in advising management on priority issues; and help the public to better understand the approximate time frames and costs needed to carry out the strategies and activities presented throughout the plan.

Five action plans are contained in the FMP:

1. Education and Outreach
2. Ecosystem Protection
3. Partnerships with Community Groups
4. Conservation Science
5. Administration

The implementation of the five action plans within the CBNMS management plan will take place within the framework of the Ecosystem Protection Implementation Plan (see pages 197-205), which is organized around three key habitats of the sanctuary: rocky relief of the Bank, soft bottom habitat, and open ocean. This approach ensures that the sanctuary adequately addresses the priority resource management issues within each key habitat. It also allows sanctuary staff to identify opportunities to collaborate between program areas focused around priority sanctuary habitats.

INTRODUCTION

OVERVIEW

Purpose and Need for Designation

Cordell Bank National Marine Sanctuary (CBNMS) has been vested with the authority, in accordance with the National Marine Sanctuaries Act (NMSA), to provide comprehensive and coordinated conservation and management of the marine resources surrounding the northernmost seamount on the California continental shelf. Cordell Bank is characterized by a combination of oceanic conditions and undersea topography that provide for a highly productive environment in a discrete, well-defined area. The Bank itself consists of a series of steep-sided ridges and narrow pinnacles resting on a plateau 300 to 400 feet deep. The shallowest depth on Cordell Bank is 115 feet below the sea surface, yet only a few miles to the west there are water depths of 6,000 feet.

The prevailing California current flows southward along the coast, moving nutrients to the upper levels of the Bank, while upwelling of nutrient-rich bottom waters stimulates growth of planktonic organisms. These nutrients, combined with high light penetration in bank waters, sustain a vigorous biological community that includes various algae and numerous types of invertebrates, fish, marine mammals, sea turtles and seabirds. The particular combination of benthic plants and animals at Cordell Bank and their variation with depth may be found in few, if any, other places. Some species are deep-water forms, but most are known from nearshore waters.

The eastern edge of the sanctuary is located 6 nautical miles from the coast and is separated from the coast of Marin and Sonoma counties by the northern arm of Gulf of the Farallones National Marine Sanctuary (GFNMS). The coastal areas of west Marin and Sonoma counties are sparsely populated, with ranching, dairy farms, agriculture, and public open space maintaining the rural character. Bodega Bay is a fishing port that harbors the closest marinas to the sanctuary. The harbor also serves as the departure point for charter vessels that provide recreational fishing and wildlife viewing opportunities in the sanctuary, although access to the sanctuary is often limited due to unfavorable sea conditions.

History of CBNMS

In July 1981, the National Oceanic and Atmospheric Administration (NOAA) received a recommendation to establish Cordell Bank as a National Marine Sanctuary from Cordell Expeditions, a non-profit organization dedicated to the exploration and description of the Bank. NOAA evaluated the recommendation in accordance with the requirements of the National Marine Sanctuary Program (NMSP) regulations (15 CFR 922). Cordell Bank was found eligible for inclusion on the List of Recommended Areas (LRA) and was placed on the list in 1981. More complete information on the site was collected by NOAA and incorporated into a resource summary and site description that was distributed to the public and agencies for comment in 1982. It was determined that Cordell Bank was an area of special significance that was not

adequately protected. The final rule went into place in 1989, and Cordell Bank was designated a national marine sanctuary. The operation and management of CBNMS was originally combined with that of the adjacent GFNMS, then known as the Point-Reyes Farallon Islands National Marine Sanctuary (PRNMS). Under this approach, the management of the research, education, and resource protection programs were a collateral function of the GFNMS manager. Since its designation in 1989, the sanctuary has grown from having no staff or budget to a dedicated staff of six and an annual budget of $635,000. The first full-time staff member was hired in 1995, but was funded by GFNMS. In 1998, a separate $129,000 budget was allocated; in 2000, two additional staff were hired; and in 2003, a manager and an additional staff member were hired. The original management plan, developed at the time of designation of the sanctuary, provided guidelines to ensure that all management actions undertaken in the first five years of designation were directed to resolving important issues as a means of meeting sanctuary objectives. Management objectives were considered in three areas: resource protection, interpretation, and research. The management plan also called for promulgation of five regulations or prohibitions.

THE CBNMS MANAGEMENT PLAN

The CBNMS management plan is made up of two complementary parts: regulatory and non-regulatory. The regulatory component includes both site-specific regulations or prohibitions and general regulations that apply to all thirteen national marine sanctuaries. Regulations are used to control or restrict human behavior that is not compatible with resource protection. The non-regulatory component of the management plan includes CBNMS' three program areas: Education and Outreach; Conservation Science; and Resource Protection. These three program areas are supported by an administrative framework that ensures all resource management activities are coordinated and provides an appropriate infrastructure to help meet the goals and objectives set forth by this management plan. Collectively, the above-mentioned parts make up the whole of the management plan and all the parts are important tools for effective resource management.

Both the regulatory and non-regulatory components of the management plan are structured to address the priority resource management issue areas identified during the management plan review, which include the following site-specific issues and programs: Education and Outreach; Ecosystem Protection; Partnerships with Community Groups; Conservation Science; Boundary Modifications; and Administration. The priority cross-cutting issues and programs identified through the management plan review process include: Maritime Heritage; Ecosystem Monitoring; Community Outreach; and Administration. The spatial context for addressing these issues is not limited by the geographically drawn, and often politically driven boundaries of just a single sanctuary, but is across all three sanctuaries included in the Joint Management Plan Review (JMPR) process as well as areas outside of CBNMS, GFNMS, and the Monterey Bay National Marine Sanctuary (MBNMS).

Management Plan Reviews

The 1992 congressional legislation that reauthorized the NMSA required that each of the national marine sanctuaries engage in a management plan review process to reevaluate site-specific goals and objectives, management techniques, and strategies. This five-year management plan review process has provided CBNMS with the opportunity to: take a closer

look at how the environment has changed over the past fifteen years; understand the cause and effect relationship of human activity and natural perturbations on the marine resources; and engage the public in the management decision making process. As a result of this process, CBNMS is reshaping how it manages the marine resources by restructuring its program areas and regulations. Management issues are complicated by many factors including: incomplete ecosystem-based scientific knowledge on which to base decisions; the diversity of uses and interests that need to be considered; the environmental, social, economic, and cultural value of the resources; and the complexity and diversity of the marine resources themselves.

Joint Management Plan Review Process (JMPR)

The NMSP reviewed the management plans of CBNMS, GFNMS, and MBNMS jointly. These sanctuaries are located adjacent to one another, are managed by the same program, and share many of the same resources and issues. In addition, all three sites share overlapping interest and user groups. It was also more cost effective for the NMSP to review the three sites jointly than to conduct three independent reviews. During the review, the sanctuaries evaluated management and operational strategies, regulations, and boundaries. The review process provided an opportunity to better coordinate programs between the three sanctuaries.

Cross-Cutting Action Plans

The goal of the cross-cutting action plans is to build upon existing coordination efforts and identify some activities that should be jointly implemented so that these three sites can operate as integrated and complementary sites to better protect the sanctuary resources. This will ensure that scarce program resources are used more efficiently and result in more consistent and coordinated delivery of programs, products and services to the public. Cross-cutting actions plans were developed to address: Administration and Operations; Community Outreach; Ecosystem Monitoring; and Maritime Heritage. Though the implementation of other activities contained in the site-specific plans may also be effectively coordinated, the NMSP determined that the cross-cutting action plans would be jointly developed and implemented jointly across the three sites.

Biogeographic Assessment

In support of the JMPR process, NOAA's Biogeography Program developed an assessment to identify important biological zones, time periods, and ecological linkages within the three national marine sanctuaries and their encompassing biogeographic region. This Geographic Information Systems (GIS) analysis extended from Point Arena in the north to Point Sal in the south, and identified key biological areas (e.g., areas of species richness and reproductive areas), time periods, and communities within the area of interest on the continental shelf and slope. The results of the biogeographic assessment have been integrated into the FMP / Final Environmental Impact Statement (FEIS).

The Value in Building Community Partnerships

Recognizing the challenges that lay ahead with the management plan review process, in December 2001, a CBNMS Sanctuary Advisory Council was assembled with six members and five alternates to provide advice to the sanctuary manager on resource management issues. The advisory council includes one agency and five stakeholder representatives, with an alternate for each seat. The advisory council provides a platform for public input into the management of the marine resources of CBNMS. This partnership has allowed CBNMS to make use of and build on the knowledge, roles, and resources that the private sector and other agencies have to offer. The advisory council participated in the entire management plan review process, from scoping meetings to providing input on the range of issues to be addressed in the new management plan. The advisory council has been a vehicle for drawing in public support, making progress through cooperation, and including the community in the decision-making process.

BUILDING A NEW MANAGEMENT PLAN

Vision Statement

The vision, goals, and objectives that follow are based on those in the original management plan. At the commencement of the JMPR process, CBNMS staff worked together to build a vision for the future of the site over the next five years and beyond that reflects the current sanctuary framework and needs:

Cordell Bank is characterized by a combination of oceanic conditions and undersea topography that supports rich and diverse marine communities. Two worlds come together at this offshore submerged island: open ocean species thrive in close proximity to a benthic reef community.

CBNMS' highest priority is resource protection. The sanctuary takes a leading role in ecosystem management, focusing on biological and physical processes. Together, with our partners, we work to protect biological communities and their habitats. By addressing current management issues and anticipating future challenges to Cordell Bank, we strive to maintain a healthy marine environment now and for future generations.

CBNMS Goals and Objectives

CBNMS has clearly defined goals on which to develop program areas and regulations for the Cordell Bank Sanctuary. These goals are broad and intended to be for the site as a whole. Specific goals and objectives were also developed for each issue or program area in the management plan. In order to be consistent with the guiding legislation established in the NMSA, the overriding constitution for the thirteen national marine sanctuaries, CBNMS has chosen the following priority goals:

Improve the conservation, understanding, management, and sustainable use of marine resources;

Enhance public awareness, understanding, and appreciation of the marine environment;

Maintain for future generations the habitat and ecological integrity of the natural assemblage of living resources that inhabit these areas;

Maintain the natural biological communities, protecting and (where appropriate) restoring and enhancing natural habitats, populations, and ecological processes;

Provide authority for comprehensive and coordinated conservation and management of these marine areas and activities affecting them, in a manner that complements existing regulatory authorities;

Create models of, and incentives for, ways to conserve and manage these areas, including the application of innovative management techniques; and

Cooperate with global programs encouraging conservation of marine resources.

The management strategies planned for CBNMS are directed to meet these goals and objectives. It should be noted that although the sanctuary goals and objectives are listed discretely, they are overlapping. Collectively, the management strategies developed in the management plan address the full range of goals and objectives set forth in the previous paragraph.

Addressing Goals and Objectives within an Ecosystem Context

These priority goals and objectives lead CBNMS to take an ecosystem-based approach to managing a fluid marine environment with great temporal and spatial complexity and diversity. CBNMS' experience during the management plan review process has shown that the scientific community, resource agencies, and the public have recognized the importance of an integrated ecosystem-based approach to protect marine biodiversity and habitats. The NMSP's emphasis on marine ecosystem management is consistent with other state and federal agencies' programs and initiatives.

Very early on, CBNMS took the steps to ensure an ecosystem approach for the management plan review process by identifying a study area for the DEIS. It was determined that in this JMPR process the study area would be inclusive of a broader biogeographic area from Point Arena to Point Sal, where biological zones, time periods, and ecological linkages could be identified irrespective of the political boundaries of the individual sanctuaries. In addition to looking at ecological components across boundaries, human-use activities and corresponding resource management issues were evaluated and, as appropriate, addressed across a broader geographic boundary than a single sanctuary. This broad-scale ecosystem approach is carried over into the action plans in the FMP.

Tools for Effective Management Planning

CBNMS' management plan was built not only to protect the marine resources and biodiversity, but also to consider maintenance of economic equity, cultural integrity, and human social structures. CBNMS is looking at a wide range of activities that take place in the sanctuary and evaluating them in terms of whether they are compatible with resource protection and protect the structure, function, and diversity of the marine environment. In order to better evaluate human-

use activities and their impacts on the resources, CBNMS used three strategic tools in the development of the management plan: science, socioeconomics, and local knowledge.

Science

Protection of living and nonliving marine resources is the primary objective of the NMSP, and science serves an important role in understanding, measuring, and predicting change in the status of the marine ecosystem. Scientific inventories, research, and monitoring provide an important information base for resource managers to understand and evaluate the effectiveness of management regimes. NOAA collected data from individual researchers and institutions throughout the region and, where possible, integrated it into our GIS to spatially identify significant living and nonliving marine resources, habitats, and physical and geological features. These data were used to help describe and define the ecosystem, identify areas of special significance, and locate important ecosystem support systems.

Socioeconomics

In California alone, ocean industries such as fishing and shipping account for approximately 2 percent of the gross domestic product, amounting to roughly $800 billion annually. These numbers paint an important picture about the need to properly manage the marine resources. A sustainable community recognizes both ecosystem sustainability and economic sustainability as mutually beneficial. The NMSP considers not only the potential cost of management restrictions on income generating activities, but also public benefits derived from long-term protection of nationally significant resources. A cost/benefit analysis, found in the FEIS, will help to determine the socioeconomic impacts on user groups of any proposed actions in this management plan.

Local Knowledge

Local knowledge represents the voice of direct experience and interaction with the marine resources over time. Many of the community partners involved in the management plan review process have been in and on the waters of the sanctuary for up to half a century. Their knowledge is more extensive and long range than much of the scientific research available for the study area. CBNMS not only honors and incorporates local knowledge, but also realizes stakeholder groups have a deep and integrated respect for the natural world. These local voices represent local interests, issues, and concerns to be balanced against those from the outside. The sanctuary advisory council (SAC), local mariners, and the public provided valuable input to the development of this management plan.

Looking at the Next Five Years and Beyond

Since its establishment in 1972, the NMSP has been building models for better marine resource management. But even today, with better knowledge of the natural world and more experience managing human behavior, the NMSP continues to build new models to enhance resource protection. This is why we call the CBNMS management plan a “living document,” serving as a flexible and responsive framework for managing impacts on natural marine systems.

Cordell Bank Sanctuary's "living document" also serves as a proactive tool for planning a sustainable future. To ensure a sustainable future, CBNMS' "living document" will provide a framework for not only addressing the resource management issues of the present, but also anticipating those emerging issues of the future.

The emergence of new issues and other unforeseeable factors may affect specific aspects of sanctuary management as described in this plan. However, the overall goals, management objectives, and general guidelines will continue to be relevant. Throughout the next five years of this plan, the aim is to carefully adjust the plan to changing circumstances in light of the experience gained in actual management. Additionally, modification to the scope and scale of the action plans may have to be made due to unforeseeable changes in levels of funding. Again, the goals and objectives of the plan will remain unchanged.

OVERVIEW OF JOINT MANAGEMENT PLAN REVIEW PROCESS

The National Marine Sanctuaries Act (NMSA) requires the National Marine Sanctuary Program (NMSP) to periodically review sanctuary management plans to ensure the sanctuary sites continue to best conserve, protect, and enhance their nationally significant living and cultural resources. Cordell Bank National Marine Sanctuary (CBNMS) had not reviewed or revised its management plan since its designation in 1989. Recent scientific discoveries, advancements in managing marine resources, and new resource management issues provide the basis for the development of this new five-year management plan.

The NMSP has reviewed the management plan of CBNMS together with those of Gulf of the Farallones and Monterey Bay national marine sanctuaries. These sanctuaries are located adjacent to one another, managed by the same program, and share many of the same resources and issues. In addition, all three sites share many overlapping interest and user groups. It is also more cost effective for the program to review the three sites jointly rather than conducting three independent reviews. Using a community-based process that has provided numerous opportunities for public input, the NMSP identified priority resource management issues to be addressed in the management plans. Through the review process, management strategies, regulations, and boundaries were also evaluated.

The sanctuary's management plan describes the objectives, policies, and activities for CBNMS. It also describes boundaries, identifies staffing and budget needs, and sets priorities and performance measures for resource protection, research, and education programs. The management plan will guide the development of future management activities over the next five years.

STAGES OF THE CBNMS MANAGEMENT PLAN REVIEW PROCESS

Public Scoping Meetings

The CBNMS management plan review process began in Fall 2001 with a four-month public scoping period to identify specific management priority issues for the next five to ten years. As a part of the Joint Management Plan Review (JMPR), the NMSP held twenty public scoping meetings in communities throughout the northern-central California coast, in Sacramento, and in Washington, D.C. Approximately 1,000 people participated in these forums and submitted approximately 4,000 comments. All comments were compiled and posted on the JMPR website (http://www.sanctuaries.nos.noaa.gov/jointplan/).

Joint management plan review public meeting. Photo: Sarah Marquis, NOAA

In addition to public scoping meetings, the program accepted written comments. Comments were sent to the NMSP in the form of e-mails, letters, faxes, and petitions. The program received approximately 6,500 e-mails, 300 letters, 13 faxes, and a petition with 1,700 signatures. A *Summary Scoping Document* was prepared and distributed to each of the sanctuary advisory councils. This document organizes all the comments received through early February 2002 into thirty general issue categories.

Issue Prioritization

Four separate prioritization workshops were held with the sanctuary advisory councils to evaluate the cross-cutting and site-specific marine resource management issues identified during the public scoping process. These recommendations were given to staff for consideration in developing the final list of issues to address in the JMPR.

The first workshop held in April 2002 in Half Moon Bay, involved all three advisory councils jointly prioritizing the cross-cutting issues raised during the scoping process. Cross-cutting issues were defined as any issue that applied to two or more sanctuaries. Following this joint workshop, individual advisory councils met to prioritize site-specific issues raised during the public scoping process. The results from these workshops were distributed to advisory council members in a document entitled *Report on Sanctuary Advisory Council Prioritization Workshops.* The document is posted on the JMPR website (http://www.sanctuaries.nos.noaa.gov/jointplan/).

The *Report on Sanctuary Advisory Council Prioritization Workshops* summarizes the results from four separate prioritization workshops held with members of the Cordell Bank, Gulf of the Farallones, and Monterey Bay national marine sanctuaries advisory councils. One workshop was held jointly with all three advisory councils to prioritize the cross-cutting issues. The three advisory councils also met individually to prioritize site-specific issues raised during scoping. This document includes the actual ranking the councils gave to each issue based upon the following criteria: site benefits, urgency, and feasibility.

NMSP staff (from all three sanctuaries and the NMSP headquarters) met to determine, as a program, the final list of priority cross-cutting and site-specific marine resource management issues to address in the management plan reviews. This group developed the final list of management plan issues using the advice of the advisory council and sanctuary staff, including the *Report on Sanctuary Advisory Council Prioritization Workshops*. The final list was released to the public in the document entitled *National Marine Sanctuary Program Selection of Priority Issues to Address in the Joint Management Plan Review*. This document is posted on the JMPR website (http://www.sanctuaries.nos.noaa.gov/jointplan/).

The *National Marine Sanctuary Program Selection of Priority Issues to Address in the Joint Management Plan Review* report presented the priority issues the NMSP planned to address in the JMPR process. The cross-cutting and site-specific priorities are presented in a summary chart as well as a text explanation of the rationale behind the decision to address or not address each issue.

Issue-Based Working Groups

Issue based working groups were established to recommend specific actions for the sanctuary to undertake to address priority issues identified during the public scoping and prioritization phases. The working groups met, on average, eight times over a seven-month period from December 2002 through June 2003. Membership of the groups included sanctuary staff, members of the advisory council, nominated experts from the community, agency representatives, and the public. The groups heard from technical advisors, reviewed published documentation, and used this information to recommend specific management actions for the sanctuary to use in developing the new management plan. CBNMS created four working groups and two internal teams, and participated in five cross-cutting working groups. While working groups included outside experts, internal teams consisted of sanctuary staff only.

The CBNMS site-specific working groups were: Education and Outreach; Ecosystem Protection; Partnerships with Community Groups; and Conservation Science. The site-specific internal teams were Administration and Boundary Modifications. The cross-cutting working groups (including representatives from two or more sanctuaries and advisory councils) were: Ecosystem Monitoring; Maritime Heritage; and Community Outreach. The cross-cutting internal team was Administration. The recommendations that came out of these working groups were prioritized and the highest ranked activities were compiled in a document entitled *Cordell Bank National Marine Sanctuary Recommendations*. The document is posted on the JMPR website (http://www.sanctuaries.nos.noaa.gov/jointplan/).

The *Cordell Bank National Marine Sanctuary Recommendations* report details the goals, objectives, and strategies recommended by each working group. The report includes background information, an overview of the working group participants and process, a detailed description of each proposed strategy, and how each strategy was ranked according to the criteria of: Site Benefits; Complexity; Short-term Feasibility; Long-term Feasibility; Improved Coordination Between Sites; and Urgency.

Review of Working Group Recommendations

The recommendations from the issue-based working groups underwent several rounds of review in preparation for creating the Draft Management Plan (DMP). The recommendations were first sent to the sanctuary advisory council (SAC), which reviewed the document as a whole and forwarded it with their comments and priorities to the sanctuary manager. The advisory council considered: overlaps or gaps within the recommendations; the feasibility and value of each proposed activity; and any suggestions or comments. The advisory council also prioritized each activity as high or low priority based on six criteria: Site Benefits; Complexity; Short-term Feasibility; Long-term Feasibility; Improved Coordination Between Sites; and Urgency (the same criteria used by the working groups).

The sanctuary staff then reviewed the SAC's recommendations, comments and priorities using the same considerations and criteria that the SAC had used. The sanctuary manager considered both the staff and advisory council comments as he made the final decision regarding activities to be included in the DMP.

Final Management Plan

Following the DMP public comment period, sanctuary staff revised the DMP, by addressing comments, and incorporating changes to create the Final Management Plan (FMP) and Final Environmental Impact Statement (FEIS). The FMP/FEIS will be released to the public and submitted to Congress and the governor for review. Following a 45-day review period and completion of any necessary changes, the final management plan (FMP) and accompanying regulations will become effective.

SANCTUARY SETTING

PHYSICAL SETTING

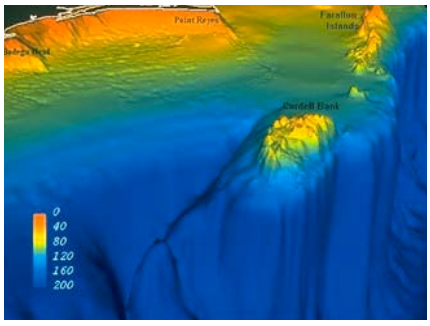
Location

Cordell Bank National Marine Sanctuary (CBNMS) protects an area of 529 square miles (399 square nautical miles) off the northern California coast. The main feature of the sanctuary is Cordell Bank, an offshore granite bank located on the edge of the continental shelf, about 43 nautical miles northwest of the Golden Gate Bridge and 20 nautical miles west of the Point Reyes lighthouse. CBNMS is entirely offshore, in federal waters, and shares its southern and eastern boundary with the Gulf of the Farallones National Marine Sanctuary (GFNMS). The CBNMS eastern boundary is six miles from shore and the western boundary is the 1000 fathom isobath on the edge of the continental slope.

CBNMS is located in one of the world's four major coastal upwelling systems. The combination of oceanic conditions and undersea topography provides for a highly productive environment in a discrete, well-defined area (Shmieder, 1982a). The vertical relief and hard substrate of the Bank provides benthic habitat with nearshore characteristics in an open ocean environment 20 nautical miles from shore.

Geology

Two distinctive geologic features characterize the geology of CBNMS: the shallow granitic Cordell Bank and the surrounding soft bottom of the continental shelf and slope.

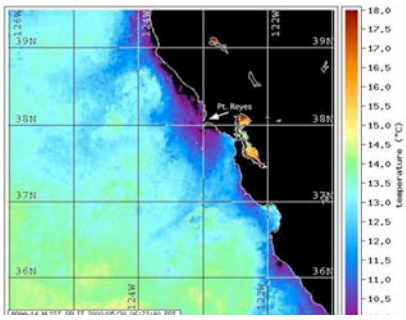


Cordell Bank perches dramatically on the edge of the continental shelf.

Cordell Bank is composed of a granite block that was created as part of the southern Sierra Nevada range some 93 million years ago. The Bank is one of the few offshore areas where the granite block emerges from the newer sediments that make up most of the continental shelf. The Bank itself is about 4.5 miles wide by 9.5 miles long. The Bank meets the continental shelf in water depths between 300 and 400 feet. Jagged ridges and pinnacles rise abruptly from this plain and reach up to 115 feet below the sea surface. In many places, the sides of the ridges and pinnacles are extremely steep, often with slopes greater than 80 degrees (Shmieder, 1985). Six nautical miles to the west of the Bank, along the sanctuary boundary, the continental slope drops steeply to 6,000 feet and more.

The ocean bottom around the Bank and within the sanctuary contains few distinguishing features and is chiefly comprised of mud and sand deposits. Deposits of undifferentiated mud and sand extend in a plume to the south and a fan to the east of Cordell Bank. The complexity of the underwater topography and sediment distribution increases near the coast within GFNMS.

Climate and Oceanography



Satellite image of the temperature of the ocean surface from the spring of 2000. Photo: NOAA

The calendar year at Cordell Bank can be broken into three oceanographic seasons: upwelling season, relaxation season, and winter storm season. The upwelling season typically begins with the spring transition, characterized by strong persistent winds from the northwest. This usually occurs sometime in late February or early March, and is the start of the annual productivity cycle along northern and central California. During this season, upwelling driven by winds from the northwest alternate with periods of calm. These winds generally begin to subside by late July. August through mid-November is the relaxation season. During this time, winds are mostly light and variable, and the seas can be calm for a week or two at a time. This changes abruptly with the arrival of the first winter storms from the Gulf of Alaska. From late November through early February, winter storms create large waves and strong winds along the coast. Ocean conditions can be treacherous all year, but especially during winter storms.

BIOLOGICAL SETTING/ LIVING MARINE RESOURCES

Marine Birds


Black-footed Albatross feed in the productive waters of CBNMS. Photo: Rich Stallcup

The waters around Cordell Bank provide critical foraging habitat for many species of seabirds. Seabird density over Cordell Bank can be among the highest of any area in central and northern California. Fifty-nine seabird species have been identified feeding in or near the sanctuary. The composition of seabirds found at Cordell Bank is a mix of local breeding birds and highly migratory, open-ocean species. While the local residents use the nearby Farallon Islands and Point Reyes areas to nest, some migrants nest thousands of miles away. A recent study using radio tags documented that Black-footed Albatross nesting in the northwest Hawaiian Islands were "commuting" to Cordell Bank waters to forage before returning to feed chicks on their nests on Midway Atoll.

Other migratory species use the productive waters around the Bank as a stopover on their annual migration route. Hundreds of thousands of Sooty Shearwaters can be seen on days when they are migrating through the sanctuary. Sanctuary waters are equally important to local breeders. Most of the worlds' small population of Ashy Storm-petrels, which nest on Southeast Farallon Island, can be seen on the water near the Bank. More than 20,000 Cassin's Auklets have been counted in a single day.


Gulls, albatross, and many other marine birds inhabit the surface of CBNMS in search of food. Photo: Rich Stallcup

Some common sanctuary species include the Black-footed Albatross, Northern Fulmar, Sooty Shearwater, storm-petrels, Cassin's Auklet, Rhinoceros Auklet, phalaropes, and many species of gulls.

Marine Mammals

Twenty-six species of marine mammals (a combination of resident and migratory species) have been observed within the sanctuary. Gray whales, for example, pass the Bank on their annual migrations between Arctic feeding grounds and Mexican breeding areas.

Dall's porpoises feed on fish species in CBNMS. Photo: Peter Pyle

The Dall's porpoise is one of the most frequently sighted marine mammals in the sanctuary, along with humpback and blue whales. Individuals of all species use the sanctuary as a destination feeding ground. Large numbers of the eastern Pacific humpback whales and blue whales feed during the summer months within the Cordell Bank-Bodega canyon area.

The harbor porpoise, a species widely distributed in coastal waters but rarely seen offshore, is regularly observed within the sanctuary's shallow areas. Pacific white-sided dolphins and northern right whale dolphins are abundant. Other cetaceans observed in the sanctuary include Risso's dolphins and killer whales.

California sea lions are the most common pinniped found in CBNMS. Photo: NOAA

The California sea lion, the most abundant pinniped in California waters, has been observed in CBNMS more frequently and in greater numbers than other pinnipeds. The northern fur seal is also abundant in the area in late fall and winter (most of them use summer breeding grounds in the Channel Islands). Steller sea lions have decreased drastically in California in recent years, but Cordell Bank remains a feeding area for this species, possibly because of the abundance of rockfish and sardines around the Bank. Nearby rookeries include Año Nuevo Islands and the Farallon Islands. The sea lions' winter haul-out grounds include Point Reyes and offshore rocks along the Sonoma County coast.

Humpback whales congregate in the waters of CBNMS for the krill found there in abundance. Photo: Tom Kieckhefer

Fish Resources

More than 180 species of fish have been identified in the CBNMS. Many species of rockfish (*Sebastes* spp.) can be found at all depths and habitats on and around the Bank. The Bank provides critical habitat for young of the year, juvenile, and adult rockfishes. Lingcod are especially conspicuous in the wintertime, when they move up onto the Bank to spawn. Many species of flatfish use the soft-bottom habitat around the Bank, and albacore tuna and salmon frequent the

sanctuary on a seasonal basis. The recovery of the Pacific sardine population is apparent in the waters surrounding Cordell Bank.

Rockfish (Sebastes spp.) occupy many niches in the Bank ecosystem. Photo: Tony Chess

Benthic Organisms

An abundant cover of benthic organisms can be seen on the upper rock surfaces of Cordell Bank. The constant food supply washing the Bank combined with a hard substrate for attachment provide ideal conditions that support a rich assemblage of benthic invertebrates. The high light penetration allows for algal photosynthesis far deeper than in nearshore coastal waters. These conditions support benthic algae more commonly associated with shallow nearshore habitats. Space is the limiting factor on the upper pinnacles and ridges of Cordell Bank. Ridges are thickly covered with sponges, anemones, hydrocorals, gorgonian corals, hydroids, tunicates, and scattered crabs, holothurians, and gastropods. In some places, the cover is up to one foot thick and very brightly colored, mainly in white, pink, yellow, and red. The brilliant reds produced by the fluorescent strawberry anemones are especially striking.

Encrusting life of all colors cover the bank pinnacles. Photo: Cordell Expeditions

HUMAN-USE ACTIVITIES

Regional Context

The eastern edge of the sanctuary is located six nautical miles from shore and is separated from the coast of Marin and Sonoma Counties by the northern arm of GFNMS. As an offshore sanctuary, human activities within the sanctuary are limited due to its remote nature. The primary activities include commercial shipping (the northern shipping lane of San Francisco Bay passes through the sanctuary), commercial and recreational fishing, wildlife viewing, research, and education. The coastal areas of west Marin and Sonoma counties are sparsely populated, with ranching, dairy farms, agriculture, and public open space maintaining their rural character. Most of the people in Marin and Sonoma live about an hour inland from the coast. Bodega Bay is an active fishing port that has the closest marinas to the sanctuary. This harbor also serves as the departure point for charter vessels that provide recreational fishing and wildlife viewing opportunities in the sanctuary.

To the southeast of the sanctuary is the major San Francisco metropolitan area, with a population of about eight million people. The City and County of San Francisco functions as the administrative center of the Bay Area, providing a focal point for many financial, transportation, manufacturing, and government establishments, as well as a source of jobs for area residents.

Commercial Shipping

The southeast corner of Cordell Bank in located approximately five nautical miles from the terminus of the northern shipping lanes designated by the U.S. Coast Guard (USCG). Vessel

traffic entering or leaving San Francisco Bay via the northern lane passes through the sanctuary. From June 1, 2000, through June 30, 2001, 2,291 commercial vessels reported using the northbound shipping lanes. Of these, 935 were inbound and 1,356 were outbound. San Francisco is a staging port for cruise ships traveling north through CBNMS to Alaska and, to a lesser degree, south to Monterey. Cruise ship calls to San Francisco Bay in 2005 included 88 separate visits.

Fishing Activities

Commercial and recreational fishing target rockfish, salmon, and pelagic species. Photo: NOAA

The Cordell Bank area has supported an active commercial and recreational fishery. Commercial and recreational activity is regulated by the Pacific Fishery Management Council (PFMC) and the California Department of Fish and Game (CDFG). Commercial fisheries have generally targeted groundfish, flatfish, salmon, crab and albacore tuna. Recreational fisheries have generally focused on rockfish, lingcod, salmon, and albacore tuna. Most of the private boats and charter vessels that fish at Cordell Bank are from Bodega Bay. Recreational fishing at Cordell Bank is strongly influenced by the weather. Strong winds and rough ocean conditions often prevent smaller boats from venturing out to the Bank.

Wildlife Viewing

Wildlife viewing is an increasingly popular activity at Cordell Bank. The birding community has traveled to the Bank for many years to observe species of open ocean seabirds. More species of albatross have been seen over Cordell Bank than anywhere else in the Northern Hemisphere.

Wildlife viewing is the best way for people to experience the rich environment of Cordell Bank. Photo: NOAA

Because of the abundance of food, the Cordell Bank area is also a destination feeding ground for leatherback sea turtles, humpback and blue whales. Beginning in early summer and continuing through fall, feeding turtles, humpback and blue whales frequent sanctuary waters. This coincides with the calmest weather of the year, and many charter vessels from Bodega Bay and San Francisco make regular whale-watching trips to the Bank at this time.

Education

One of the sanctuary's goals is to promote appreciation, public awareness, and understanding for the marine resources of Cordell Bank. The sanctuary education program sponsors a yearly lecture series; participates in many outreach events; hosts a monthly radio show; delivers programs at local schools; and trains teachers to educate about the sanctuary and the ecosystem it protects. Other opportunities for the public to learn about the sanctuary include: interpretive displays, brochures, websites, and field ecology outings.

Research

Research in CBNMS answers important questions about the ecosystem the sanctuary protects. Photo: NOAA

The first research effort at Cordell Bank occurred in 1869 when Edward Cordell mapped the Bank. Early research was confined to geographic surveys and rock sampling. In the 1970s and 80s, Cordell Expeditions, a non-profit organization, initiated a process of exploration to describe the Bank. Today, the majority of research and monitoring in the sanctuary is conducted by the sanctuary or in partnership with other state and federal agencies and non profit organizations. Every year, the National Marine Fisheries Service assesses juvenile rockfish recruitment and regularly conducts population surveys for adult fishes. The sanctuary has been monitoring ocean conditions since 1997. These programs have included the investigation of oceanographic conditions and how they relate to the distribution and abundance of krill, seabirds, and whales. From 2001 to 2005, the sanctuary and partners characterized benthic habitats on Cordell Bank and monitored fishes and invertebrates on and around the Bank.

Schmieder, Robert W. Cordell Bank Expedition Report 1984. Cordell Expeditions, Walnut Creek, CA. November 1985